Complete Summary

GUIDELINE TITLE

Guideline for the management of ingested foreign bodies.

BIBLIOGRAPHIC SOURCE(S)

Eisen GM, Baron TH, Dominitz JA, Faigel DO, Goldstein JL, Johanson JF, Mallery JS, Raddawi HM, Vargo JJ 2nd, Waring JP, Fanelli RD, Wheeler-Harbough J. Guideline for the management of ingested foreign bodies. Gastrointest Endosc 2002 Jun;55(7):802-6. [65 references] PubMed

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Foreign object ingestion and/or food bolus impaction

GUIDELINE CATEGORY

Diagnosis
Evaluation
Management

CLINICAL SPECIALTY

Emergency Medicine
Gastroenterology

Internal Medicine
Otolaryngology
Pediatrics
Radiology
Surgery

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

To aid the endoscopist in the management of patients with possible foreign object ingestion and/or food bolus impaction

TARGET POPULATION

Patients with possible foreign object ingestion and/or food bolus impaction

INTERVENTIONS AND PRACTICES CONSIDERED

Diagnosis/Evaluation

1. Physical examination
    - Assessment of ventilation, airway compromise, and risk of aspiration
    - Evaluation of signs and symptoms
2. Biplane radiography
3. Contrast examination (considered, but not recommended)
4. Computed tomography (CT) scan with 3-dimensional (3-D) reconstruction
5. Use of handheld metal detectors
6. Endoscopic evaluation
7. Follow-up radiography

Management

1. Rigid esophagoscopy
2. Flexible endoscopy
3. Other equipment used to remove objects:
    - Rat tooth forceps
    - Alligator forceps
    - Polypectomy snare
    - Polyp grasper
    - Dormier basket
    - Retrieval net
    - Overtubes of esophageal and gastric lengths
    - Foreign body protector hood
4. Proteolytic enzyme (i.e., papain) (considered, but not recommended)
5. Glucagon intravenous
6. Emetics (considered, but not recommended)
7. Cathartics (considered, but not recommended)
8. Acid suppression (considered, but not recommended)

9. Surgical intervention

MAJOR OUTCOMES CONSIDERED

Not stated

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

In preparing this guideline, a MEDLINE literature search was performed, and additional references were obtained from the bibliographies of the identified articles and from recommendations of expert consultants.

A literature search was performed on the PubMed database of the National Center for Biotechnology Information. References chosen for review were English-language citations from the gastroenterology, pediatric, emergency medicine, otolaryngology, general surgical, and radiological literature. Because little or no data exist from well-designed prospective trials, emphasis was given to results from large series and reports from recognized experts.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Guidelines for appropriate utilization of endoscopy are based on a critical review of the available data and expert consensus.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Not stated

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not applicable

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Diagnosis

Older children and fully conscious, communicative adults may be able to identify the material swallowed and point to the location of discomfort. Localization of the level of impaction, however, is often not reliable. In many instances the ingestion goes unrecognized or unreported until the onset of symptoms, which may be remote from the time of ingestion. Young children, the mentally impaired, or the psychiatrically deranged may present with choking, refusal to eat, vomiting, drooling, wheezing, bloodstained saliva, or respiratory distress.

Swelling, erythema, tenderness, or crepitus in the neck region may be present with oropharyngeal or proximal esophageal perforation. The abdomen should be examined for evidence of peritonitis or small bowel obstruction. These conditions will require surgical intervention and consultation should not be delayed for endoscopy. Ventilation, airway compromise, and the risk of aspiration should be assessed.

Biplane radiographs identify most true foreign objects, steak bones, and free mediastinal or peritoneal air. The lateral projection confirms location in the esophagus and may reveal the presence of more than one coin. However, fish or chicken bones, wood, plastic, most glass, and thin metal objects are not readily

seen. A contrast examination should not be performed routinely because of the risk of aspiration and because coating of the foreign body and esophageal mucosa compromises subsequent endoscopy. If symptoms are not clear or specific, a cautious contrast study may be appropriate to clarify the presence of a foreign body or its location. Computed tomography (CT) scanning may be useful in some cases but may be negative with radiolucent objects and the yield may be improved with the use of 3-dimensional reconstruction. Handheld metal detectors detect the majority of swallowed metallic objects and may be of use as a screening tool in pediatric patients. Persistent symptoms related to the esophagus in cases of suspected foreign body ingestion should be pursued with endoscopy even after an apparently unrevealing radiographic evaluation.

Management

General

Once foreign body ingestion is diagnosed, the physician must decide whether or not intervention is necessary, what degree of urgency is called for, and by what means. Management is influenced by the patient's age and clinical condition; the size, shape, and classification of the ingested material; the anatomic location in which the object is lodged; and the technical abilities of the endoscopist.

The timing of endoscopic intervention in foreign body ingestion is dictated by the perceived risks of aspiration and/or perforation. Urgent endoscopic intervention is required when a sharp object or disk battery is lodged in the esophagus. Urgent intervention is also required to prevent aspiration when an ingested foreign object or food bolus impaction creates a high-grade obstruction and the patient is unable to manage his or her secretions. Those without evidence of high-grade obstruction who are not in acute distress can be handled less urgently because spontaneous passage may occur. Under no circumstances should a foreign object or food bolus impaction be allowed to remain in the esophagus beyond 24 hours from presentation. In children, the duration of the foreign body in the esophagus may be unknown. Complications such as transmural erosion and fistulae formation can occur. When the duration of the esophageal foreign body is not known, the endoscopy is best performed with the patient under general anesthesia, and surgical consultation is suggested.

Rigid and flexible esophagoscopy are both safe and effective methods of removing various esophageal foreign bodies. Rigid esophagoscopy requires general anesthesia. Flexible endoscopy is performed with the patient under conscious sedation or general anesthesia depending on the patient's age, ability to cooperate, and the type and number of objects to be retrieved. Rigid esophagoscopy or direct laryngoscopy may be attempted for impacted sharp objects at the level of the hypopharynx and cricopharyngeus muscle. Flexible endoscopy is preferred in most other circumstances because it is successful in the majority of pediatric patients and allows a thorough examination of the esophagus, stomach, and duodenum.

Equipment

Standard and therapeutic endoscopes are preferred, although successful management of swallowed foreign objects with a transnasally inserted

bronchoscope has been described. Equipment that should be readily available includes rat tooth and alligator forceps, polypectomy snare, polyp grasper, Dormier basket, retrieval net, overtubes of esophageal and gastric lengths, and a foreign body protector hood. Practice at grasping a similar object with the available instruments outside the patient is beneficial. Use of an overtube offers airway protection during retrieval, allows for multiple passes of the endoscope during removal of multiple foreign bodies or a food impaction, and protects the esophageal mucosa from lacerations during retrieval of sharp objects. In children, the overtube is less commonly used because of the risk of esophageal injury during the overtube insertion. The foreign body protector hood is preferable in protecting the esophagus during removal of sharp or pointed objects. Elective endotracheal intubation is an alternative means of assuring airway protection.

Food Bolus Impaction

The most common esophageal foreign body in adults is impacted meat or other food bolus. Patients who are in severe distress or unable to swallow oral secretions require immediate intervention. If the patient is not uncomfortable, not at risk for aspiration, and able to handle his or her secretions, then intervention need not be emergent and can be postponed to a reasonably convenient time because food impactions will often pass spontaneously. However, endoscopic intervention should not be delayed beyond 24 hours from presentation because the risk of complication may increase.

The initial endoscopic examination should verify and locate the site of the impaction. The food bolus can usually be removed en bloc or in a piecemeal fashion with the instruments described above. As previously stated, an overtube may facilitate multiple passes of the endoscope, protect the esophageal mucosa, and minimize the risk of aspiration. Once reduced in size, the bolus can often be passed under endoscopic visualization and direction. When the endoscope, with insufflation and distention of the esophageal lumen, can be steered around the food bolus and into the stomach, the endoscope can then be pulled back and used to gently push the bolus into the stomach. The high incidence of underlying esophageal pathology in this setting increases the risk associated with the practice of blindly pushing an impacted food bolus with the endoscope or a dilator. A friction-fit adaptor fitted to the end of the endoscope has been used as a direct-vision suction device to remove the impacted food.

A proteolytic enzyme, like papain, should not be used because it has been associated with hypernatremia, erosion, and esophageal perforation. The administration of glucagon 1.0 mg intravenously, in an attempt to relax the esophagus, is generally safe and may promote spontaneous passage of an impacted food bolus while definitive endoscopic therapy is being coordinated. However, its use should not delay definitive endoscopic removal.

Blunt Objects

Coins can be removed easily with a foreign body forceps ("rat-tooth," "alligator"), snare, or a retrieval net. Smooth, round objects are best secured with a retrieval net or basket, although in a prospective in vivo study the retrieval net was superior. Objects that cannot be easily grasped in the esophagus may be advanced into the stomach, if endoscopic visualization is afforded, where they

may be more easily grasped. Nonendoscopic removal of blunt radiopaque esophageal foreign objects with a Foley catheter under fluoroscopic guidance has been reported to be successful with a low complication rate, but provides no control of the object as it is being removed, provides no airway protection, and does not allow for assessment of underlying esophageal pathology. Conservative outpatient management is indicated in almost all instances in which the foreign body has entered the stomach, although in some institutions endoscopic removal is the standard practice. Most objects are passed within 4 to 6 days, although some may take as long as 4 weeks. While awaiting spontaneous passage of a foreign body, patients are usually instructed to continue a regular diet and observe their stools for the ingested object. In the absence of symptoms, weekly radiographs are sufficient to follow the progression of small blunt objects not observed to pass spontaneously. In adults, rounded objects greater than 2.5 cm in diameter are less likely to pass the pylorus. Objects that fail to leave the stomach within 3 to 4 weeks should be removed endoscopically. Once the object is past the stomach, surgical removal should be considered for objects that remain in the same location for more than 1 week. Symptoms of fever, vomiting, or abdominal pain are indications for immediate surgical evaluation.

Long Objects

Objects longer than 6 to 10 cm, such as toothbrushes and spoons, will have difficulty passing the duodenal sweep and should be removed. The use of a longer (>45 cm) overtube that extends beyond the gastroesophageal junction is beneficial. The object can be grasped with a snare or basket and maneuvered into the overtube. The entire apparatus, foreign body, overtube, and endoscope can then be withdrawn in one motion, avoiding losing grasp of the object in the overtube itself.

Sharp-Pointed Objects

A myriad of ingested sharp-pointed objects have been described. The ones most commonly associated with complications are chicken and fish bones, straightened paperclips, toothpicks, needles, bread-bag clips, and dental bridgework. Patients suspected of swallowing sharp-pointed objects must be evaluated to define the location of the object. Because many sharp-pointed objects are not readily visible radiographically, endoscopy should follow a negative radiologic examination. Sharp-pointed objects lodged in the esophagus represent a medical emergency. Direct laryngoscopy is an alternative for objects lodged at or above the cricopharyngeus. Otherwise, rigid or flexible endoscopy may be used when this is unsuccessful or for objects lodged below this area. Although the majority of sharp-pointed objects that enter the stomach will pass through the remaining gastrointestinal (GI) tract without incident, the risk of a complication caused by a sharp-pointed object is as high as 35%. Therefore, a sharp-pointed object that has passed into the stomach or proximal duodenum should be retrieved endoscopically if it can be accomplished safely. Otherwise sharp-pointed objects may be followed with daily radiographs to document their passage, and surgical intervention should be considered for objects that fail to progress for 3 consecutive days. Patients should be instructed to immediately report abdominal pain, vomiting, persistent temperature elevations, hematemesis, or melena. Endoscopic retrieval of sharp objects is accomplished with use of retrieval forceps or polypectomy snare. The risk of mucosal injury during sharp object retrieval can

be minimized by orienting the object with point trailing during extraction, using an overtube, or fitting a protector hood to the end of the endoscope.

Disk Batteries

Special considerations apply with small disk or button battery ingestion. Liquefaction necrosis and perforation can occur rapidly when a disk battery is lodged in the esophagus. After radiographic documentation, batteries lodged in the esophagus should be immediately recovered because of possible fatal complications. A stone retrieval basket or retrieval net is most often successful. An alternative method uses a through-the-scope balloon under direct vision. The balloon is passed through the working channel of the endoscope, distal to the foreign body. The balloon is inflated and withdrawn to engage the battery. The balloon, battery, and endoscope are then removed as a unit. The use of an overtube or endotracheal tube is essential to protect the airway during the performance of this procedure.

If the battery cannot be directly retrieved from the esophagus, it should be pushed into the stomach where it can often be successfully retrieved with a basket. However, once in the stomach, most disk batteries pass without consequence. Batteries that have passed beyond the esophagus need not be retrieved unless the patient manifests signs or symptoms of injury to the gastrointestinal tract, or a large-diameter battery (greater than 20 mm in diameter) remains in the stomach beyond 48 hours as determined by a repeat radiograph. Once past the duodenal sweep, 85% are passed within 72 hours. A radiograph every 3 to 4 days is adequate. Emetics have not been beneficial in the management of disk battery ingestions and have led to retrograde migration of gastric batteries into the esophagus. Cathartics and acid suppression have no proven role in battery ingestion although gastrointestinal lavage may expedite passage.

Narcotic Packets

Internal concealment of narcotics wrapped in plastic or contained in latex condoms, referred to as "body packing," is seen in regions of high drug traffic. The packets can usually be seen radiographically and the use of computed tomography scanning may be helpful, although false-negative scans have been reported. Rupture and leakage of the contents can be fatal. No attempt should be made to remove drug packets endoscopically because of the risk of rupture. Surgical intervention is indicated for failure of the packets to progress, signs of intestinal obstruction, or suspected rupture.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of evidence supporting the recommendations is not specifically stated.

When little or no data exist from well-designed prospective trials, emphasis is given to results from large series and reports from recognized experts. Guidelines for appropriate utilization of endoscopy are based on a critical review of the available data and expert consensus.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate management of foreign body ingestion and food bolus impaction

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

Further controlled clinical studies are needed to clarify aspects of this statement, and revision may be necessary as new data appear. Clinical consideration may justify a course of action at variance to these recommendations.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness
Timeliness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2002 Jun

GUIDELINE DEVELOPER(S)

American Society for Gastrointestinal Endoscopy - Medical Specialty Society

SOURCE(S) OF FUNDING

American Society for Gastrointestinal Endoscopy

GUIDELINE COMMITTEE

Standards of Practice Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Committee Members: Glenn M. Eisen, MD (Chair); Todd H. Baron, MD; Jason A. Dominitz, MD; Douglas O. Faigel, MD; Jay L. Goldstein, MD; John F. Johanson, MD; J. Shawn Mallery, MD; Hareth M. Raddawi, MD; John J. Vargo II, MD; J. Patrick Waring, MD; Robert D. Fanelli (SAGES Representative); Jo Wheeler-Harbough (SGNA Representative)

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the American Society for Gastrointestinal Endoscopy (ASGE) Web site.

Print copies: Available from the American Society for Gastrointestinal Endoscopy, 1520 Kensington Road, Suite 202, Oak Brook, IL 60523

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on March 23, 2005. The information was verified by the guideline developer on March 31, 2005.

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